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रूपनगर, पंजाब-140001/ Rupnagar, Punjab-140001 Ph. 01881-231285, 83, e-mail: purchase@iitrpr.ac.in

No. 1783-22/MME-10192/Deptt/GTE/PS

Dated 03.04.2023

CORRIGENDUM

(Tender Notice No. 1783-22/MME-10192/Deptt/GTE/PS Dated: 10/03/2023)

Reference CPPP Tender ID No. 2023_IITRP_744568_1 for "Tender for Supply & Installation of 100kN Universal Tensile Testing Machine with accessories". The specifications for "100kN Universal Tensile Testing Machine with accessories" are replaced with attached Annexure-A.

The last date of receipt and opening of Bids for "100kN Universal Tensile Testing Machine with accessories" is hereby extended upto 13.04.2023. Bidders are requested to submit their bids as per revised Technical Specifications.

Timings and all other details and terms & conditions remain the same.

Registrar

Annexure-A

INDIAN INSTITUTE OF TECHNOLOGY, ROPAR

Technical Compliance sheet

100kN Universal Tensile Testing Machine with accessories

Note: Supplier MUST provide the model number of their product in the cover letter which complies with the tender specifications and an original printed manual on the letter head of principal supplier of the same shall be submitted with the bid. Bidders shouldhighlight the features in the printed manual using color text liner/manually mark which complies with the tenderedspecifications. Vendors are strongly advised not to submit any other manual in their bid. The following compliance sheet to be filled-up correctly, without making any changes to it and completely. Otherwise, it may lead to cancellation of their bid without any communication from IIT Ropar.

S.No	Items/	Specifications	Changes Needed
	Parameters		
1.	General	100kN or higher, Vertical, Universal Testing Machine with accessories	No change
2.	Low and high temperature extendibility	THE MACHINE MUST BE UPGRADABLE TO HIGH TEMPERATURE TESTING. This means that the TIERODS, GRIPS AND FIXTURES MADE UP OF MATERIALS WHICH CAN WITHSTAND A TEMPERATURE OF 1100 DEG C or more USUALLY MATERIAL OF FCC STRUCTURE CAN PERFORM WELL AT NEGATIVE TEMPERATURES AS WELL. THIS MUST BE ENSURED.	THE MACHINE MUST BE UPGRADABLE TO HIGH TEMPERATURE TESTING. This means that the TIERODS or if a separate pull rods are provided CAN WITHSTAND A TEMPERATURE OF 1100 DEG C or more If there is a separate pull rod for high temperature testing which will only be affected at high temperature upto 1100deg C tests then TIE-rods can be shorter and high temperature pull rods must be provided
3.	Scope of Work	Supply, installation, commissioning and training at our site	No change
4.	Load Cell& Frame	 Load cell capacity: 100 kN or higher Calibration: Accuracy +/-1% of the displayed load or better (for load 100N to 2000N) and 1% for 1/1 to 1/500 of load cell rated capacity, Confirm to JIS B7721 Class 1, EN 10002-2 	 Load cell capacity: 100 kN or higher Calibration: Accuracy +/-1% of the displayed load or better (for load 500N to 1000N) and 1% or

4.	Safety	 Grade 1, ISO 7500-1 Class 1, BS1610 Class 1, DIN51221 Class 1 Breaking Force of Load Cell: 102% (or higher) of the Max. Load capacity of the load cell. At smaller loads (1kN - 5kN) there should not be any wrong values or high error (5% of the load applied) in load/displacement measured by the machine. Maximum return speed 500mm/min or more Crosshead Travel: 1300 mm or more with speed range from 0.00005 to 1500mm/min with a precision of +/-0.1% via AC/DC motor Break detection, Auto/Full auto range Switch over Over Load and Automatic Stop Function Operates at Single phase 200V to 230V power supply Data Capture rate - 16,000 Hz Data sampling rate - 16 MHz Frame rigidity - 250 kN/mm or more Cross head position precision - Within +/- 0.5% of indicated value, however, +/- 0.01 mm when indicated value is below 10 mm 	 lower for 1/1 to 1/100 of load cell rated capacity, Confirm to JIS B7721 Class 1, EN 10002-2 Grade 1, ISO 7500-1 Class 1, BS1610 Class 1, DIN51221 Class 1 Breaking Force of Load Cell: 102% (or higher) of the Max. Load capacity of the load cell. 2. At smaller loads (1kN - 5kN) there should not be any wrong values or high error (5% of the load applied) in load/displacement measured by the machine. 3. Maximum return speed 500mm/min or more 4. Crosshead Travel: 1200 mm or more with speed range from 0.005 to 500mm/min with a precision of +/-0.1% via AC/DC motor 5. Break detection, Auto/Full auto range Switch over 6. Over Load and Automatic Stop Function 7. Data Capture rate - 5,000 Hz or more 9. Frame rigidity - 230 kN/mm or more 10. Effective test width - 500 mm or more 11. Cross head position precision - Within +/- 0.5% of indicated 12. value, however, +/- 0.01 mm when indicated value is below 10 mm
4.	Safety	 Multiple safety feature: 1. If force changes exceed a certain level during specimen setting or return, the testing machine is stopped by the safety function. 2. Dual Emergency stop switches – As a safety 	Multiple safety feature: 1. If force changes or exceed a certain level during specimen setting or return, the testing machine is stopped by the safety function and/or limit setting.
		measure, emergency stop switches are provided on both sides. Self-check function for parameters like motor pulse, sensor amplifier, board power supply etc. confirming that the instrument is in perfect working order. If desired, notification of pre-set maintenance periods is also possible.	13. One emergency stop is must to stop the machine during malfunctioningBuilt-in safety for motor pulse, sensor amplifier, board power supply, over

			temperature, over current etc. confirming that the instrument is in perfect working order.
5.	Grips	 Flat samples: 1mm to 20mm (or higher) thickness Cylindrical specimens: dia. 4mm to 12mm threaded sample adapters for Tensile testing of metallic materials. Must have the option to mount smaller load cell (size and capacity) and Grips/tools like compression, flexure etc. (Vendor should provide details for this arrangement) 100kN manual type non-shift wedge type grip for tensile testing suitable for flat sample testing upto 14 mm and round sample upto 9 mm. Compression plate with min 100kN capacity with 100 mm dia or larger plate should be supplied. 3 point bending test kit which should follow standards: ASTM D5943 with Punch radius x width (mm) : R5 x 72 mm and Support roller radius x width (mm) : R2 x 110 and distance between supports should be 400 mm or more. 	 7. Flat samples: 1mm to 14mm (or higher) thickness (either one set of grips for the range or more) 8. Cylindrical specimens: dia. (this is the dia of the specimen not the thread) 4mm to 9mm threaded sample adapters for Tensile testing of metallic materials. 9. Must have the option to mount smaller load cell (size and capacity) and Grips/tools like compression, flexure etc. (Vendor should provide details for this arrangement) 10. 100kN manual type non-shift wedge type grip for tensile testing suitable for flat sample testing upto 14 mm or more and round sample upto 9 mm or more. 11. Compression plate with min 100kN capacity with 100 mm dia or larger plate should be supplied. 12. 3-point bending test kit which should be for 100kN, and for a specimen width of 70mm (span length 280mm or more) or more For a temperature range of -70 to 200 or extended range. The fixtures for this if any must be included. All grips in this item must confirm for room temperature testing or in the range of -70 to 200 deg C, except for 3 point bend which should be for -70 to 200 deg C or more.
6.	Digital Controller	 Latest controller to accept various information from transducer like force, extensometer, COD gauges and displacement with minimum 2 additional slots for future expansion. High speed real time synchronization of process data at all the channels, Monitoring of safety and errors and reporting to the monitor Data (force, extension) recording should be 5000Hz or better 	No change

7.	Software	 a. Software should support the user for all tasks with software wizard with explanatory pictures, situation specific user tips, warning, error messages and self-diagnosis tool on routine basis to assist user. b. Evaluation/analysis of data and documentation including the following c. Full statistical analysis. d. Mechanical Properties data e. User defined report generation format f. Facility to store & export results in various format like word, excel, CSV & PDF g. Ethernet data connection h. Load, displacement, strain control mode i. Mention the resolution, a better resolution is essential 	No change
8.	Computer and User interface	Machine should be supplied with a computer with monitor of 21" or more with 1 TB HD and 8 GB RAM with windows 10 or higher and i7.	No change
9.	Software features	 Latest, user friendly, intuitive control and analysis software. Software should provide pre-configured test methods conforming to international standards (ASTM, ISO, EN, etc.) in certain applications such as Tensile tests, Three-point bend test as per annotations. Bidder should be able to configure one or two test method as per requirement. Software supplied shall be licensed perpetually and any upgradation should be free of cost Full statistical evaluation/analysis of data and documentation including Strain-time plot, Strain rate plot, as per Creep and Creep Crack Growth Testing, load displacement curve for tensile and fracture tests Facility to store and export results in various format like word, excel, ASCII & PDF User should be able to install the in multiple systems for post processing (windows operating system) 	 Latest, user friendly, intuitive control and analysis software. Software should provide preconfigured test methods conforming to international standards (ASTM, ISO, EN, etc.) in certain applications such as Tensile tests, Threepoint bend test as per annotations. Bidder should be able to configure one or two test method as per requirement. Software supplied shall be licensed perpetually and any upgradation should be free of cost Full statistical evaluation/analysis of data and documentation (statistical analysis such as smoothening of the data) including stress-strain, load-displacement curve for tensile and fracture tests (this fracture test is not cyclic/dynamic. This is monotonic loading test. For more info. See ASTM E1820) Facility to store and export results in various format like word, excel, PDF User should be able to install

10.	Extensometer	 Extensometer Contact type extensometer with mounting accessories with resolution <=1micron Or manual Extensometer with equivalent outcome. GL: 5mm, 10mm, 20mm, 50mm Class 0.5 accuracy to EN ISO 9513 	the in multiple systems for post processing (windows operating system) 1. Extensometer AutomaticContact type extensometer with mounting accessories with resolution <=1micron Or manual Extensometer with equivalent outcome. 2. GL: 10mm, 20mm or 25mm, 50mm (it can be a single extensometer with adaptors or 3 different extensometers) 3. Class 0.5 accuracy to EN ISO 9513 The extensometer should be for room temperature testing
11.	Power supply	Operating Voltage 230V AC	Operating Voltage 230V AC
		Three phase 50Hz +-2Hz/220Volts +-10 Volts	Single or Three phase 50Hz +- 2Hz/220Volts +-10 Volts
12.	UPS	Suitable online UPS to be provided for uninterrupted power supply for running complete system for at least 30 minutes	No change
13.	General Qualification	 Vendor must have well-functioning technical support service center in India from at least last 5 years with proven service record. <u>Details to be</u> <u>submitted</u>. The suppliers MUST support the quoted specifications with operation manuals of all the items. Mere statement without any supporting document is not acceptable and the offer will be rejected. Any discrepancy of the manual provided and the compliance sheet will lead to disqualification. The suppliers should supply service and operational manuals of all the items. The suppliers may mention any other items as optional accessories in their quotes; however, 	 Vendor must have well- functioning technical support service center in India from at least last 5 years with proven service record. <u>Details to be submitted</u>. The suppliers MUST support the quoted specifications with operation manuals of all the items. Mere statement without any supporting document is not acceptable and the offer will be rejected. Any discrepancy of the manual provided and the compliance sheet will lead to disqualification.

	 the same should be clearly distinguished from the main requirements along with their individual prices. 6. Supporting data may also be attached. 7. Vendor should provide the tools and Spare part for smooth functioning of the machine for at least 10 years. 	 4. The suppliers should supply operational manuals of all the items. 5. The suppliers may mention any other items as optional accessories in their quotes; however, the same should be clearly distinguished from the main requirements along with their individual prices. 6. Supporting data may also be attached. 7. Vendor should smooth functioning of the machine for at least 5 years.
Technical Qualification	 A clear reference of Equipment very close the one tendered should be provided and the reference contact numbers, emails etc. should be clearly mentioned. The reference must be provided by the current head of the lab or institute wherever the equipment is supplied. The reference letter should be recent even if the machine is supplied long back. The technical details of the equipment in the form of data, images, videos may be asked during the evaluation and the bidder must respond to that in time, failing to which the bid will be disqualified. If needed an online technical discussion can be arranged and the bidder must clarify the details or provide demo of the equipment in time, failing to which the bid will be disqualified. If needed a team may visit the bidder's place to examine the functionalities of the equipment. This will add to the decision of qualification in technical terms. A pre-inspection of the equipment may be arranged for the equipment after the decision has been made. At this point if the equipment is not found satisfactory the tender may be cancelled. 	 A clear reference of Equipment very close the one tendered should be provided and the reference contact numbers, emails etc. should be clearly mentioned. The reference must be provided by the current head of the lab or institute wherever the equipment is supplied. The reference letter should be recent (obtained within last 6-8 months) even if the machine is supplied long back. The technical details of the equipment in the form of data, images, videos may be asked during the evaluation and the bidder must respond to that in time, failing to which the bid will be disqualified. If needed an online technical discussion can be arranged and the bidder must clarify the details or provide demo of the equipment in time, failing to which the bid will be disqualified. If needed a team may visit the bidder's place to examine the functionalities of the equipment. This will add to the decision of qualification in technical terms. A pre-inspection of the equipment after the decision has been made. At this point if the equipment is not found satisfactory the tender may be cancelled. If the equipment is manufactured outside India, then the inspection will be performed post-delivery during installation and any

			 unsatisfactory performance of the machine, and accessories if not rectified will lead to cancellation of tender. The rectification of the problem should be attained within 6 months of the delivery and no adjustment feature for misalignment will be accepted 8. The load frame assembly with the tie-rods and high temperature pull rods must be perfectly aligned. If any misalignment the tie-rody and high temperature pull rods must be perfectly aligned. If any misalignment the tie-rody and high temperature pull rods must be perfectly aligned.
			any misalignment is found the assembly must be changed to provide a perfect alignment and no adjustment assembly will be accepted. This must be ensured during the installation or in pre- dispatch inspection. The misalignment should not be in any direction neither on the plane perpendicular to the load line not parallel to the load line.
15.	Install Base	1. Feedback from existing users of the supplier	No change
16.	Installation	 should be provided for latest similar equipment. Installation shall be done only by factory trained service engineer by the supplier free of cost. Space required for installation or any other prerequisites shall be informed to IIT Ropar prior to supply/installation of machine. Vendor should provide the NABL traceable calibration certificate or equivalent of the system up to 100 kN Load. 	No change
17.	Training	 Full training free of cost for five persons at IIT Ropar premises after the machine installed to the satisfaction of IIT Ropar. Annual training of upto 5 users at IIT Ropar premises during the warranty period (free of cost). 	No change
18.	Warranty	 1 years on-site comprehensive warranty/ Guarantee on equipment (including load cell, grip and extensometer) (give details including scope, minimum 2 no. of visits per year) from the date of complete and satisfactory installation of the equipment against the defect of any manufacturing, workmanship and poor quality of the components. 2. System Calibration should be done at least annually during the warranty period. 	No change
19.	After Sales Service	 The supplier should provide non-comprehensive service and AMC for 2 years after warranty period. The bidder also must agree and issue a certificate stating that technical query will be responded within 2 working days and the support will be provided within 1 week from the date of reporting of the technical failure. If 	No change

		 service engineer fails to attend the complaint within 2 weeks, the warranty of the machine will automatically be extended for same number of days. 3. After sales support should be provided directly by OEM/subsidiary office and not by any third party/dealer. Optional Items 	
OP1	Furnace	High temperature chamber/furnace, temperature should reach at least 1100°C Furnace should have a minimum heating zone of 5inch with three thermocouples at different locations. Share complete details of the furnace and its controller.	High temperature chamber/furnace, temperature should reach at least 1000°C while loaded (desirable is 1100°C). Furnace should have a minimum heating zone of 2.4-4inch with three heating zones and three thermocouples at different locations. Share complete details of the furnace and its controller.
OP2	Direct Current Potential Drop (DCPD) system	A constant direct current source in pulse mode with a voltage drop measurement system from the fracture specimens like CT (ASTM E1820). The voltage drop should be measured by the instrumentation in the UTM and the data should be available at the interface for the analysis of crack extension.	No change
OP3	COD gauges	 Share complete details of the item. Hermetically sealed COD gauge with an operating temperature range of RT to 1200°C or higher High temperature extensometer. Configurations should meet ASTM E1457-00, E-1820, ISO 12135, and ISO 9513 Class 1 requirements for accuracy. Linearity: ≤0.5% of full scale measuring range Measurement range: +7mm/-1mm Share complete details of the item. 	 Hermetically sealed COD gauge with an operating temperature range of RT to 1100°C or higher High temperature extensometer. Configurations should meet ASTM E1457-00, E-1820, ISO 12135, and ISO 9513 Class 1 requirements for accuracy. Linearity: ≤0.5% of full scale measuring range Measurement range: for RT it can be (+3mm/-1mm) for higher temperature +7mm/-1mm
OP4	Environment al Chamber	 (Internal W x D x H: 400 x 400 x 660 mm minimum) Temperature range: Ambient to +350 °C Digital temperature controller Internal light door with optical-quality heated glass window for 	Share complete details of the item.(Internal W x D x H: 300 x 300 x 560 mm or more)Temperature range: -70 to +300 °C or extended range• Digital temperature controller

use with video extensometers.	• Internal light
Cooling options available for testing below ambient temperatures.	• door with optical-quality heated glass window for use with video extensometers.
Internal dimensions and external dimensions must be sufficient to be used on the supplied UTM for all the specimens mentioned in Item No. 6	Cooling options available for testing below ambient temperatures.
Share complete details of the item.	Internal dimensions and external dimensions must be sufficient to be used
Suggestive dimensions internal	on the supplied UTM for all the specimens mentioned in Item No. 6
- Height: 660 mm	-
- Width: 400 mm	Share complete details of the item.
- Depth: 400 mm	A
External	
- Height: 800 mm or more	
- Width: 550 mm	
- Depth: 850 mm or more	